Carbon Footprint Appraisal
for
Winchester City Council

Assessment Period:
1st April 2023 – 31st March 2024

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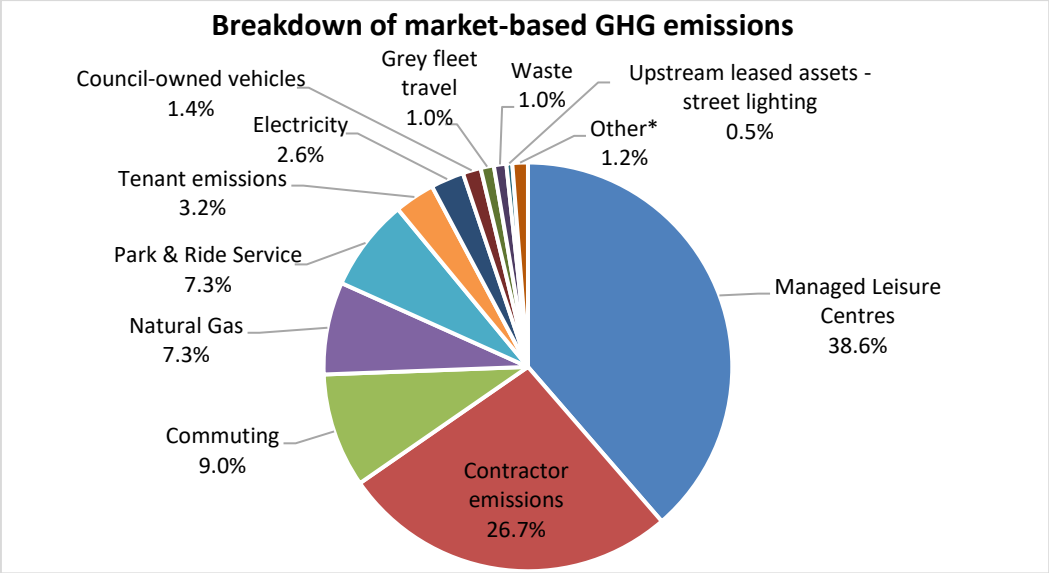
Executive Summary

Current Performance

- Winchester City Council's total market-based GHG emissions are 4,090.49 tCO_2e (with location-based emissions of 4,240.20 tCO_2e).
- The managed leisure centres are the most significant source of emissions, followed by contractor emissions (Biffa & ID Verde), accounting for 38.6% and 26.7% of the market-based emissions respectively.

Recommendations

- Regularly monitor and analyse energy consumption data to ensure it is accurate by end of year (take regular meter readings for sites that are not on automatic readers).
- Implement an energy audit programme to investigate opportunities to reduce site energy consumption across all sites.
- Encourage contractors to switch to HVO fuel to reduce emissions and improve air quality.
- Encourage staff to avoid travel by having remote meetings where appropriate.
- Encourage staff to use sustainable transport for business travel and commuting where able.
- Utilise biofuel in Park & Ride buses until the fleet is transitioned to electric buses. Hydrotreated Vegetable Oil (HVO) is a drop-in sustainable alternative to diesel.
- Offset the GHG emissions created within this data period to compensate for emissions produced, and support projects that are working towards societal net zero carbon.



*Other = home-working, LPG, petrol, water, wastewater, rail travel, taxi travel, bus travel, and refrigerants.

Metric	2017/18	2021/22	2022/23	2023/24	% change from base year	% change from prev. year
Location-based: total tonnes CO_2e	4,186.84	4,453.16	4,087.81	4,240.20	1.3% ▲	3.7% ▲
Market-based: total tonnes CO_2e	4,251.12	4,260.15	3,970.31	4,090.49	-3.8% ▼	3.0% ▲
Market-based: total tCO_2e per employee	8.71	10.92	9.04	9.17	5.3% ▲	1.4% ▲
Market-based: total tCO_2e per capita	0.035	0.033	0.031	0.032	-7.5% ▼	3.0% ▲
Market-based: scope 1 & 2 total (tCO_2e)*	1,667.75	595.57	523.41	398.16	-76.1% ▼	-23.9% ▼

* Market-based emissions were not assessed in 2017/18. In the previous year assessment, they were estimated using the UK residual fuel mix for 2017 to allow comparison.

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Quality Control

Report issue number:	3.0
Date:	27 September 2024
Calculations completed by:	Georgina Whitlock
Calculations reviewed by:	Myles Howard
Report produced by:	Georgina Whitlock
Report reviewed by:	Myles Howard
Director approval:	Dr. Wendy Buckley

1. Introduction

1.1. Company Overview

The district of Winchester City Council (WCC) is in the south of England and covers 250 square miles. The Council began assessing its carbon footprint in 2008 and continues to do so on an annual basis to monitor emissions and identify areas where reductions may be possible. The Council re-baselined in 2017/18 to account for more accurate data and an increase in scope of emission sources.

1.2. Goals & objectives

WCC has a target in place for becoming a carbon neutral authority by 2024 and the wider district by 2030. Carbon management is an area of importance for the council, as detailed in the *Council Plan 2020-2025*.

Many organisations are setting science-based targets, aiming for at least a 50% reduction in absolute emissions by 2030, and over 90% by 2050.

1.3. Data supplied for the Carbon Footprint Appraisal

A summary of the data supplied by WCC for the appraisal is provided in an accompanying annex: *"Annex 2023-24 for Winchester City Council v1.0.xlsx".*

1.4. Methodology for the Carbon Footprint Appraisal

The methodology document can be downloaded using this link:
https://www.carbonfootprint.com/docs/carbon_footprint_appraisal_-_methodology_document.pdf

1.5. Abbreviations

A/C	Air Conditioning
BEIS	Department for Business Energy & Industrial Strategy
CO_2e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
EV	Electric Vehicle
GHG	Greenhouse Gas
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
PG&S	Purchased goods and services
T&D	Transmission & Distribution
WTT	Well-To-Tank

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from **1st April 2023 to 31st March 2024** resulting from the energy consumption at WCC's facilities and its business transport activities. **WCC's base year is 2017/18.**

Previous years have been restated due to the following:

- Street lighting (HCC) moved from scope 2 to scope 3.
- Electricity data corrected for Brooks Car Park for 2021/22 and 2022/23.

2.2. Organisational & reporting boundaries

Figure 1 shows the full boundaries of the *Greenhouse Gas Protocol Corporate and Value Chain Standards*. The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has **operational control**. This assessment covers the reporting boundaries shown in Table 1, in line with the Greenhouse Gas Protocol Accounting and Reporting Corporate Standard.

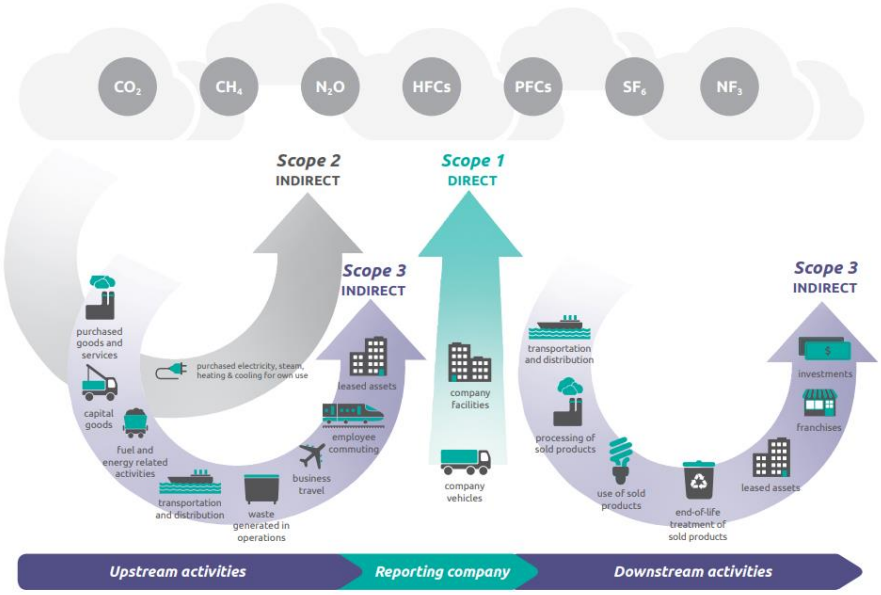

Figure 1: Overview of emissions scopes (GHG Protocol - Scope 3 Calculation Guidance v1.0 - 2013)

The following assumptions or exclusions have been made in accordance with the reporting boundary:

- Any energy consumption metered directly to tenants under their own energy contracts with suppliers has been excluded.
- Where third party tenants are recharged by WCC and operational control is not perceived (i.e., tenants have individual boilers), energy has been included in scope 3.
- Where tenants have individual boilers (and therefore operational control), though the property only has one meter and is all recharged to tenants, the energy use/boiler that the Council has operational control over (i.e., communal space) has been reported in scope 3 due to inability to separate out the data.
- Where there is a central plant serving the whole property (flats and communal spaces), it has been agreed between WCC and Carbon Footprint that this is to be included under the Council's operational control (i.e., scope 1).

Table 1: WCC's GHG Assessment boundary based on the Greenhouse Gas Protocol Accounting and Reporting Corporate Standard

(All green rows have been included in this assessment; all grey rows are not applicable; orange rows have been excluded)

Scope	Activity	Completion Status	Justification for exclusion
1	Electricity, heat or steam generated on-site	Complete	
1	On-site fuel use	Complete	
1	Company owned vehicles	Complete	
1	Fugitive emissions (e.g. refrigerant gases)	Complete	
2	On-site Consumption of purchased electricity, heat steam and cooling	Complete	
3	1. Purchased goods and services (PG&S)	Partially complete	Emissions are currently assessed for purchased water and two suppliers (Biffa & ID Verde). A screening exercise is recommended to determine the relevance of other PG&S emissions.
3	2. Capital goods	Excluded	Not currently assessed. A screening exercise is recommended to determine the relevance.
3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Partially complete	Transmission & distribution of electricity is included. Well-To-Tank emissions are currently excluded.
3	4. Upstream transportation and distribution	Partially complete	The Park & Ride bus service has been assessed. Other transport associated with PG&S is currently excluded. A screening exercise is recommended.
3	5. Waste generated in operations	Complete	
3	6. Business travel	Complete	
3	7. Employee commuting & home-working	Complete	
3	8. Upstream leased assets	Complete	
3	9. Downstream transportation and distribution	Not relevant	
3	10. Processing of sold products	Not relevant	
3	11. Use of sold products	Not relevant	
3	12. End-of-life treatment of sold products	Not relevant	
3	13.Downstream leased assets	Partially complete	Currently excludes sites where tenants are metered and billed directly by the energy supplier. We recommend this data is obtained or estimated in future.
3	14. Franchises	Not relevant	Not applicable
3	15. Investments	Not relevant	Not applicable

2.3. Calculation uncertainty assessment & materiality

The result of a carbon footprint calculation varies in accuracy depending on the data set provided. The more accurate the data supplied, the more accurate the final result. Materiality is determined by the percentage contribution of each element to the overall footprint. Based on the accuracy of the data provided (Table 2), a simple uncertainty analysis has been used to estimate the potential error margin for the appraisal results.

Table 2: Assessment accuracy, materiality and simple error analysis

Emission Source	Data source / comments	Materiality	Uncertainty	Market-based Error Margin (tCO_2e)
Managed Leisure Centres - Natural Gas	Leisure Centre provided kWh data from utility bills/meter readings. Supporting evidence was not provided, therefore uncertainty level is 5%.	High (20-40%)	5%	47.57
Commuting	Data obtained from staff survey. Results were extrapolated to account for response rate. Response rate was approximately 28%.	Medium (5-20%)	10%	37.00
Managed Leisure Centres - Electricity (Market-Based)	Leisure Centre provided kWh data from utility bills/meter readings. Supporting evidence was not provided, therefore uncertainty level is 5%.	Medium (5-20%)	5%	31.09
Home-working (Market-Based)	Data obtained from staff survey. Results were extrapolated to account for response rate. Response rate was approximately 28%.	Very Low (<1%)	50%	19.04
Natural Gas	Annual kWh data obtained from utility bills.	Medium (5-20%)	5%	14.96
Contractor fuel use	**ID Verde** – annual litres of fuel provided for WCC contracts. Petrol is used for small kit and diesel is used for vehicles and large equipment such as ride-on mowers.	Medium (5-20%)	5%	13.47
Contractor lorries	Mileage and fuel data is provided from the suppliers for WCC contracts (Biffa & ID Verde).	High (20-40%)	1%	8.22
Energy recharged to tenants - Natural Gas	Annual kWh data obtained from utility bills/energy supplier.	Low (1-5%)	5%	6.51
Tenants – Electricity (Brooks Car Park)	Annual kWh data obtained from bills/meter readings for the Brooks Car Park.	Low (1-5%)	5%	3.53
Park & Ride Service	Total litres of diesel consumed is obtained from the Transport department.	Medium (5-20%)	1%	2.99
Council-owned vans	Vehicle details, annual mileage and fuel consumption provided. Electric vans are assumed to be predominately charged at WCC sites.	Low (1-5%)	5%	2.77
Grey fleet travel	Vehicles details and annual mileage obtained from expense records and DVLA. It has been assumed that staff's personal electric vehicles are predominately charged at their homes. Data is based on date of claim rather than date of travel to be consistent with previous years.	Low (1-5%)	5%	2.14

Emission Source	Data source / comments	Materiality	Uncertainty	Market-based Error Margin (tCO_2e)
Waste	Type, weight of waste, and disposal routes obtained from supplier reports.	Very Low (<1%)	5%	2.02
Electricity (Market-Based)	Annual kWh data obtained from energy supplier and automated meter reader (AMR) data.	Low (1-5%)	5%	1.87
Managed Leisure Centres - Wastewater	Wastewater has been assumed to be 95% of supply.	Very Low (<1%)	50%	1.83
Water	Water usage data has been obtained from bills and internal records. Many bills are based on estimated readings as manual readings are taken infrequently. Blank or negative values were estimated using previous year data.	Very Low (<1%)	50%	1.74
Managed Leisure Centres - Water	Water usage data has been provided by the Leisure Centres from monthly monitoring records. Supporting evidence was not provided.	Very Low (<1%)	50%	1.69
Wastewater	Assumed 95% of water supplied is returned as wastewater. Many bills are based on estimated readings.	Very Low (<1%)	50%	1.66
Upstream leased assets - street lighting (Market-Based)	Annual kWh data obtained from Hampshire County Council.	Very Low (<1%)	5%	0.96
LPG	Annual litres purchased obtained from invoices.	Very Low (<1%)	5%	0.18
Council-owned cars	Vehicle details, annual mileage and fuel consumption provided. Electric cars are assumed to be predominately charged at WCC sites.	Very Low (<1%)	5%	0.16
Tenants - Wastewater	Wastewater has been assumed to be 95% of supply.	Very Low (<1%)	50%	0.13
Tenants - Water	Water usage data has been obtained from bills/meter readings for Shoal in the Guildhall.	Very Low (<1%)	50%	0.12
Contractor vans	Mileage and vehicle data has been provided from the suppliers.	Very Low (<1%)	5%	0.11
Petrol	Annual litres purchased obtained from invoices.	Very Low (<1%)	5%	0.04
Contractor cars	**Biffa** – fuel and mileage data has been provided.	Very Low (<1%)	5%	0.02
Refrigerants	Inspection company confirmed that no refills were required for refrigeration and air conditioning units for 2023/24.	Very Low (<1%)	1%	<0.01
Taxi	Expense claims. Cost and mileage data provided.	Very Low (<1%)	1%	<0.01
Rail	Expense claims. Cost and mileage data provided.	Very Low (<1%)	1%	0.01
Bus travel	Expense claims. Mileage data provided.	Very Low (<1%)	1%	<0.01
Managed Leisure Centres - Refrigerants	Leisure Centres confirmed no refills were required for 2023/24.	Very Low (<1%)	1%	<0.01
Energy recharged to tenants - Electricity (Market-Based)	Annual kWh data obtained from utility bills/energy supplier.	Very Low (<1%)	5%	<0.01
Total			**+/- 4.9%**	**+/- 201.83**

3. Carbon Footprint Results

3.1. Summary of results

The total location-based carbon footprint for WCC for the period ending 31st March 2024 is 4,240.20 tonnes CO_2e, and the market-based total is 4,090.49 tonnes CO_2e.

Table 3: Results of WCC's carbon footprint assessment by scope and GHG Protocol emission categories

Scope	Emission Source	Location-Based (tCO_2e)	Market-Based (tCO_2e)
1	Natural Gas	299.25	299.25
1	LPG	3.53	3.53
1	Petrol	0.83	0.83
1	Council-owned vans	55.47	55.47
1	Council-owned cars	3.25	3.25
1	Refrigerants	0.00	0.00
1	**Scope 1 Total**	**362.44**	**362.44**
2	Electricity	420.60	35.72
2	**Scope 2 Total**	**420.60**	**35.72**
3.1	Contractor emissions[1]	1,093.38	1,093.38
3.1	Water	3.49	3.49
3.3	Transmission & Distribution	36.39	1.67
3.3	Transmission & Distribution (Brooks Car Park)	3.71	3.72
3.4	Park & Ride bus service	298.66	298.66
3.5	Waste	40.32	40.32
3.5	Wastewater	3.31	3.31
3.6	Grey fleet travel	42.71	42.71
3.6	Rail travel	0.67	0.67
3.6	Taxi travel	0.07	0.07
3.6	Bus travel	<0.01	<0.01
3.7	Commuting	369.98	369.98
3.7	Home-working	38.08	38.08
3.8	Upstream leased assets - street lighting	10.72	19.11
3.13	Managed Leisure Centres[2]	1,302.79	1,580.28
3.13	Tenant emissions[3]	212.86	196.87
3	**Scope 3 Total**	**3,457.16**	**3,692.32**
All	**Tonnes of CO_2e**	**4,240.20**	**4,090.49**
All	**Tonnes of CO_2e per employee**	**9.51**	**9.17**

A full breakdown of emissions by source has been provided in Annex A.

[1] Includes emissions from contractor cars, vans, lorries and other fuel use.
[2] Includes natural gas, electricity (including transmission & distribution), and refrigerant losses for Winchester Sports and Leisure Park and Meadowside Leisure Centre.
[3] Includes energy recharged to tenants (natural gas and electricity), water and wastewater for Shoal only, and electricity for Brooks Car Park only. Excludes the managed leisure centres which are reported separately.

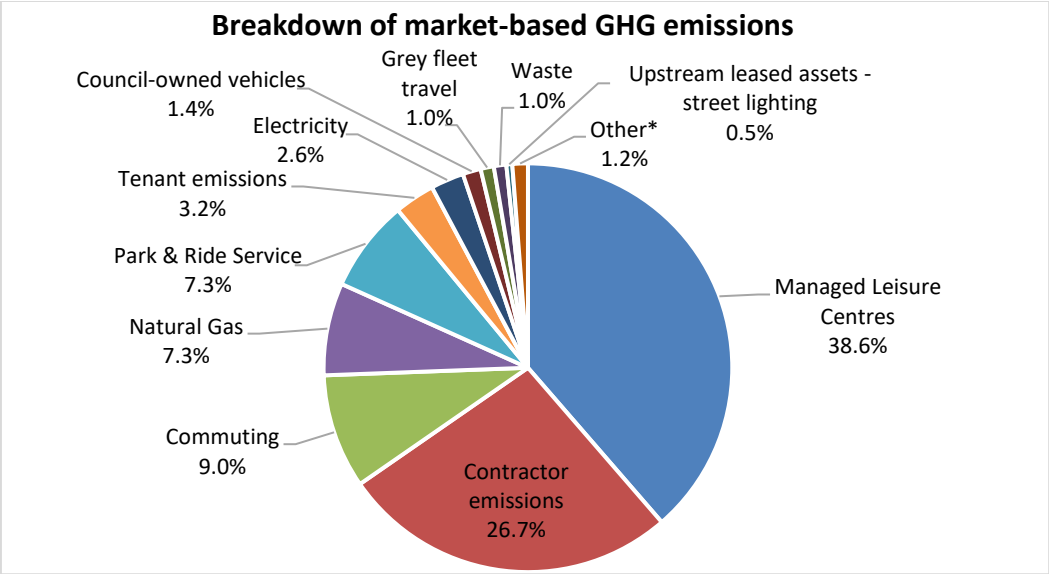

Figure 2: Percentage contribution of each element of WCC's market-based carbon footprint

*Other = home-working, LPG, petrol, water, wastewater, rail travel, taxi travel, bus travel, and refrigerants.

3.2. Emissions from energy usage at site facilities

The emissions from site energy use accounted for 52.1% of the Council's total market-based emissions. Over 70% of the total energy use emissions was associated with leisure centres (Figure 3). The majority of WCC's controlled sites are on 100% renewable electricity supplies, so the market-based emissions are generally reflecting gas usage. Electricity supplies for sites such as the managed leisure centres, street lighting and Brooks Car Park are controlled by other parties and are either confirmed to be on non-renewable supplies or unknown by WCC. The most energy-consuming "housing" site continues to be Chesil Lodge, followed by Whitewings House and Danemark Court (Table 4). The most energy-consuming "non-housing" site is Winchester Sport & Leisure Park, followed by the Guildhall (Table 5). These properties all have high gas consumption of over 200,000 kWh per year.

Recommendations:

- Request landlord of Brooks Car Park to switch to 100% renewable electricity tariff and provide evidence of this.
- Request managers of Meadowside Leisure Centre and Winchester Sport & Leisure Park to provide evidence of electricity supplier during data period and request they switch to a 100% renewable electricity supply.
- Conduct an energy audit at Winchester Sport & Leisure Park to identify opportunities to improve energy efficiency and reduce any wastage. **As a newly constructed site, the audit should focus on controls & settings (heating, air-conditioning, lighting etc.), policies and behaviours.**
- Conduct energy audits at other highest gas-consuming sites (i.e. Chesil Lodge, Guildhall, Danemark Court, and Whitewings House). **Focus on insulation, draughts, controls and settings.**

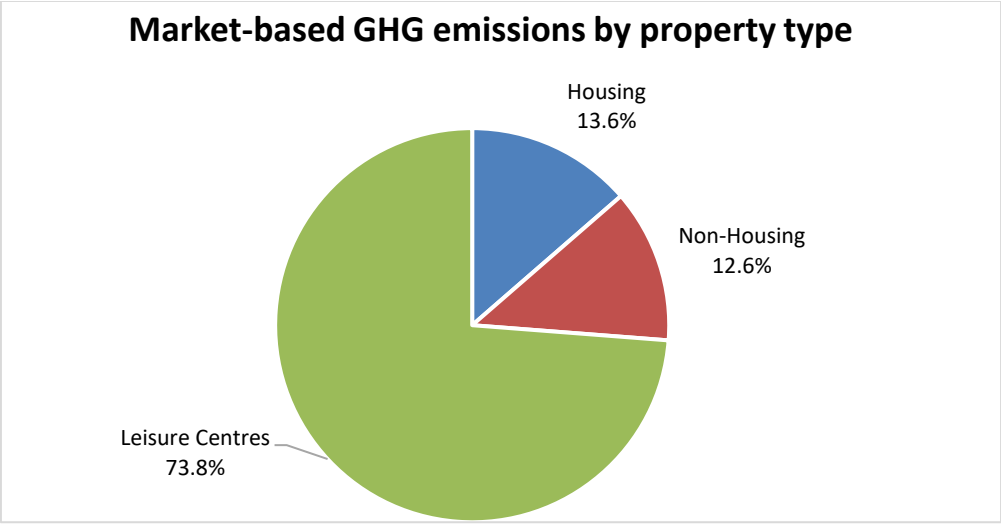

Figure 3: Breakdown of GHG emissions from energy use by property type

Table 4: Top 10 energy-using housing sites

Site: Housing	Electricity (kWh)	Gas (kWh)	Total kWh	Market-Based GHG Emissions (tCO_2e)
Chesil Lodge,	173,511	461,161	**634,672**	**84.36**
Whitewings House	60,646	221,011	**281,657**	**40.43**
Danemark Court	21,540	240,246	**261,786**	**43.95**
Makins Court Landlords Supply	76,033	123,405	**199,438**	**22.57**
Milford House	18,054	177,739	**195,793**	**32.51**
Eastacre	16,328	124,616	**140,944**	**22.80**
Gordon Watson House	18,054	98,953	**117,007**	**18.10**
Matilda Place	29,682	28,255	**57,937**	**5.17**
Richard Moss House	55,397	-	**55,397**	**-**
Brittany House	33,021	-	**33,021**	**-**
Total (top 10)	**502,266**	**1,475,386**	**1,977,652**	**269.89**
Total (all housing sites)	**806,421**	**1,551,318**	**2,357,739**	**290.49**

Table 5: Top 10 energy-using non-housing sites

Site: Non-housing	Electricity (kWh)	Gas (kWh)	Total kWh	Market-Based GHG Emissions (tCO_2e)
Winchester Sports & Leisure Park	1,446,980	5,121,650	**6,568,630**	**1,524.83**
Guildhall/City Offices	299,666	389,094	**688,760**	**71.18**
Car Park Brooks	207,353	-	**207,353**	**69.86**
West Wing / Kings Court	117,154	87,926	**205,080**	**16.08**
Meadowside Leisure Centre	83,390	79,352	**162,742**	**48.40**
Guildhall - SHOAL tenant sub-meter	155,261	-	**155,261**	**-**
Cipher House	37,294	106,788	**144,082**	**19.53**
Car Park Chesil Multi Storey	113,813	-	**113,813**	**-**
Abbey House	6,159	76,386	**82,545**	**13.97**
Hyde Lodge Offices	11,662	38,898	**50,560**	**7.12**
Total (top 10)	**2,478,732**	**5,900,094**	**8,378,826**	**1,770.97**
Total (all non-housing sites)	**3,184,382**	**5,997,413**	**9,181,795**	**1,842.11**

3.3. Emissions from contractors

The emissions associated with activities of contractors (ID Verde & Biffa) accounts for 26.7% of total market-based emissions. This includes emissions from contractor car, van, and lorry travel as well as any other fuel use (Figure 4 & Table 6). Biffa accounted for 75.4% (824.05 tCO_2e) of these emissions, with ID Verde accounting for the remaining 24.6%.

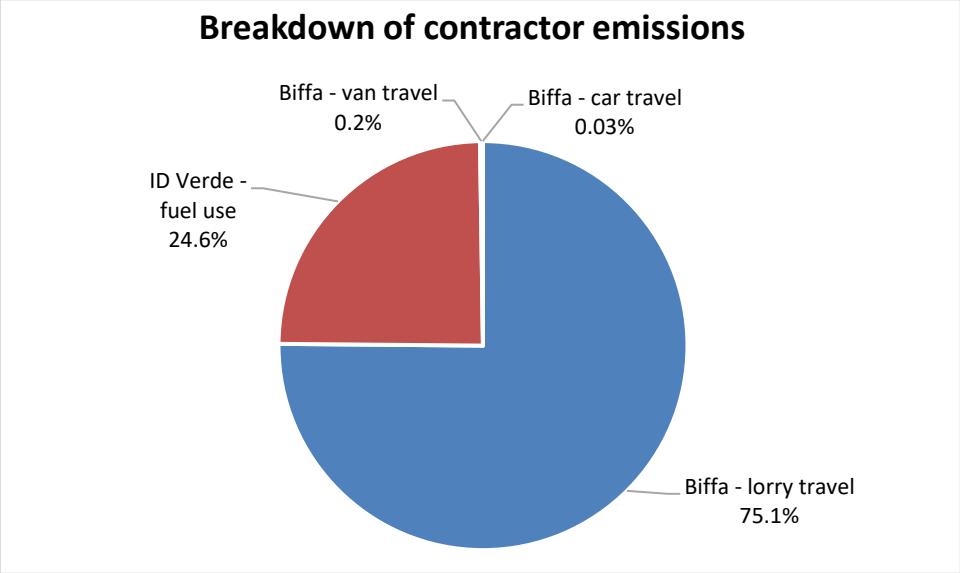

Figure 4: Breakdown of GHG emissions from contractors by activity

Table 6: Winchester City Council's contractor GHG emissions

Source	Total tCO_2e
Lorry travel (Biffa)	821.53
Fuel use (ID Verde)	269.33*
Van travel (Biffa)	2.13
Car travel (Biffa)	0.38
Total	**1,093.38**

* ID Verde's vehicle fuel is included here, as well as fuel used for small equipment and ride-on mowers.

3.4. Emissions from commuting

The commuting survey got a response rate of approximately 28%. The survey identified that commuting by car was still the most popular mode of travel (Figure 5). Only 4.2% of annual commuting mileage by car was with an electric vehicle (12.7% was with either an electric or hybrid vehicle). Commuting by bicycle or on foot accounted for 2.7% of annual commuting mileage.

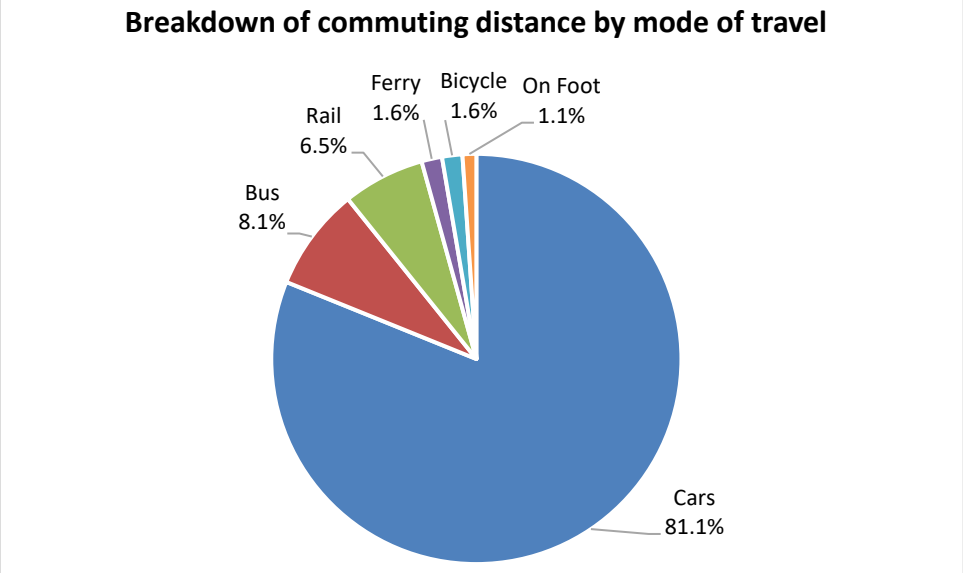

Figure 5: Breakdown of commuting distance by mode of travel

3.5. Emissions from Park & Ride Bus Service

The Park & Ride bus service consumed approximately 118,892 litres of diesel during 2023-24, producing 299 tonnes CO_2e. If this were to be switched to Hydrotreated Vegetable Oil (HVO) fuel, derived from waste oils, WCC would reduce emissions by 98.6% and avoid emitting 294 tCO_2e.

As well as reducing GHG emissions, other benefits include:

- It is a renewable source of fuel.
- It significantly reduces tailpipe emissions of nitrogen oxide (NOx), particulate matter and carbon monoxide, which are the main pollutants causing poor air quality in cities.
- It provides a market for waste oils, promoting circular economy and reducing waste.
- It avoids the environmentally destructive activities associated with extracting fossil fuels.
- It is a drop-in alternative to diesel, which means no engine or vehicle modification is required.
- No large capital expense is required for new vehicles, however the price per litre is higher than fossil diesel.

I recommend the Council switches to HVO fuel as soon as possible, even if it is a temporary measure until electric buses are implemented.

3.6. Solar Energy Generation

Winchester City Council has been increasing the amount of renewable solar energy generated within its estate. During 2023/24, the amount of electricity generated from various solar energy installations totalled **406,737 kWh**. This is equivalent to the **avoidance of 84 tonnes CO_2e**.

The total electricity demand and proportion met by on-site solar generation was modelled for several sites (Table 7). However, the amount of energy exported was unknown, therefore the total demand may be over-estimated.

Table 7: Electricity demand and solar generation at various WCC sites

Site name	Purchased grid electricity (kWh)	kWh generated by on-site solar	Estimated total electricity demand (kWh)	% met by on-site solar generation
City Offices	454,927	39,115	**494,042**	8%
Vaultex / Barfield 2	28,900	53,513	**82,413**	65%
Winchester Sport & Leisure Park	1,446,980	103,198	**1,550,178**	7%
Cipher House	37,294	6,258	**43,552**	14%

4. Comparison, Publication, and Benchmarking

4.1. Comparison to base year emissions

Winchester City Council's base year is 2017/18. The scope 1 & 2 GHG emissions have reduced by 72.2% since the base year and 11.3% since the previous year (Table 8). Previous years have been restated due to the following:

- Street lighting (HCC) moved from scope 2 to scope 3.
- Electricity data corrected for Brooks Car Park for 2021/22 and 2022/23.

Table 8: Historical comparison of WCC's market-based scope 1 & 2 GHG emissions

Scope	2017/18	2021/22	2022/23	2023/24	% change base year	% change previous year
Scope 1	548.61	431.60	376.53	362.44	-33.9%▼	-3.7%▼
Scope 2	1,119.15	163.97	146.88	35.72	-96.8%▼	-75.7%▼
Total	**1,667.75**	**595.57**	**523.41**	**398.16**	**-76.1%▼**	**-23.9%▼**

Table 9: WCC's carbon footprint comparison and percentage change

Element	2017/18 Base year	2021/22	2022/23	2023/24	% change on base year	% change on prev. year
Site gas*	1,003.59	1,487.56	1,293.61	1,380.88	37.6%▲	6.7%▲
Contractor emissions ***(Biffa & ID Verde)***	998.15	1,036.63	980.70	1,093.38	9.5%▲	11.5%▲
Site electricity* ***(Location-based)***	1,651.97	989.88	856.83	897.89	-45.6%▼	4.8%▲
Site electricity* ***(Market-based)***	1,716.25	796.87	739.33	748.18	-56.4%▼	1.2%▲
Commuting	†	286.51	414.53	369.98	n/a	-10.7%▼
Park & Ride Bus Service	386.42	371.36	324.06	298.66	-22.7%▼	-7.8%▼
Council-owned van travel	43.40	59.75	57.61	55.47	27.8%▲	-3.7%▼
Grey fleet travel	56.34	39.26	45.84	42.71	-24.2%▼	-6.8%▼
Waste	†	102.62	62.57	40.32	n/a	-35.6%▼
Home-working	†	23.16	32.45	38.08	n/a	17.3%▲
Water (and wastewater)	4.59	11.02	15.71	14.36	212.8%▲	-8.6%▼
Other fuel use (petrol, LPG etc.)	0.60	0.64	0.50	4.47	640.6%▲	788.3%▲
Council-owned car travel	22.65	7.17	2.89	3.25	-85.6%▼	12.7%▲
Other staff business travel (bus, taxi, rail, flights)	7.43	0.56	0.50	0.74	-90.0%▼	48.4%▲
Kerosene	0.00	2.54	0.00	0.00	n/a	n/a
Refrigerants	11.69	34.49**	0.00	0.00	-100.0%▼	n/a
Location-Based: Total Tonnes of CO_2e	**4,186.84**	**4,453.16**	**4,087.81**	**4,240.20**	**1.3%▲**	**3.7%▲**
- Tonnes of CO_2e per employee	**8.58**	**11.42**	**9.31**	**9.51**	**10.8%▲**	**2.1%▲**
- Tonnes of CO_2e per capita	**0.034**	**0.035**	**0.032**	**0.033**	**-2.6%▼**	**3.7%▲**
Market-Based: Total Tonnes of CO_2e	**4,251.12**	**4,260.15**	**3,970.31**	**4,090.49**	**-3.8%▼**	**3.0%▲**
- Tonnes of CO_2e per employee	**8.71**	**10.92**	**9.04**	**9.17**	**5.3%▲**	**1.4%▲**
- Tonnes of CO_2e per capita	**0.035**	**0.033**	**0.031**	**0.032**	**-7.5%▼**	**3.0%▲**

* Includes: Council sites, energy recharged to tenants, and externally managed supplies (leisure centres, Brooks car park, and street lighting).
** Based on estimates (equipment capacity and average leak rates).
† Not assessed.

The Defra 2023 conversion factor for UK electricity generation has increased by 7% compared to the 2022 conversion factor. This is as a result of an increase in the natural gas portion of the UK's fuel mix, thus reducing the percentage of the UK's energy from renewables and causing an increase in Winchester City Council's location-based site electricity emissions.

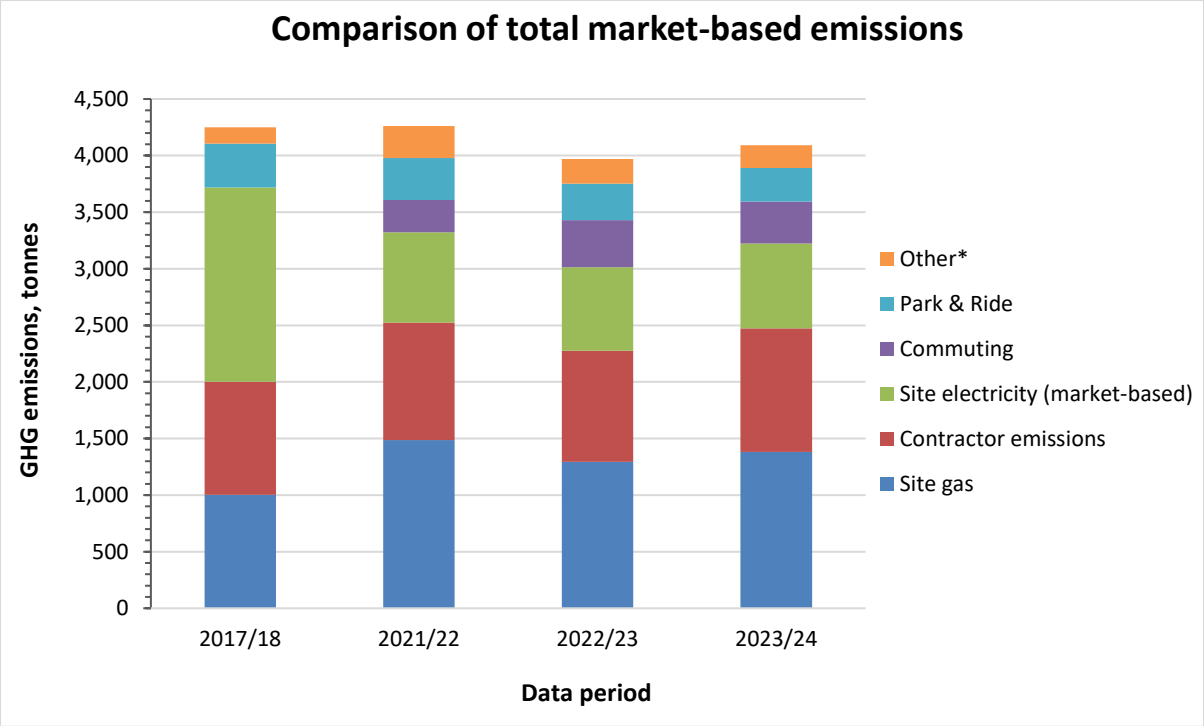

Figure 6: Detailed emissions comparison for the various aspects of WCC's emissions

** Other includes: council-owned vehicle travel, waste, home-working, water, other fuel use (petrol, LPG), staff business travel (personal vehicle, bus, taxi, rail, flights), kerosene, and refrigerants.*

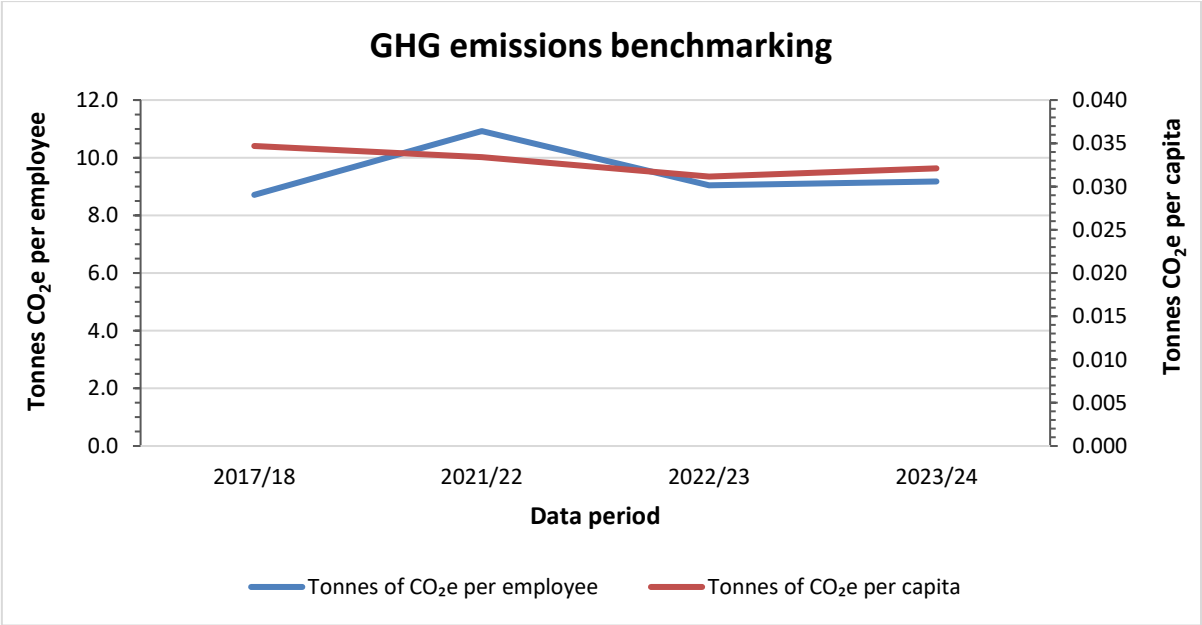

Figure 7: Carbon footprint of WCC for internal benchmarks

4.2. External Publication and Benchmarking of Your Carbon Footprint

We strongly encourage you now to **publish your carbon footprint results on Carbon Database Initiative (CaDI)** – our new global platform.

https://carbondi.com/

External publication demonstrates your commitment to carbon management and to responsible transparency. Your results will also be endorsed on CaDI as 'Verified' for additional peace of mind for you and viewers of the data.

Using CaDI, you can also search other organisations that have reported their emissions to benchmark your performance.

As a Carbon Footprint client, your headline carbon footprint results will be automatically uploaded to your CaDI account for your ease – **though, rest assured, they will only be made public upon you choosing to publish them.**

Many companies report Scope 1 & 2 emissions for comparison against others as elements included in Scope 3 can vary greatly. The table below summarises the emissions across these scopes, along with intensity metrics to help with benchmarking.

Table 10: WCC's benchmarked GHG emissions

Year/Element	Location-based	Market-based
Total number of employees	446	
Capita population	127,444	
Tonnes of CO_2e	4,240.20	4,090.49
Tonnes of CO_2e per employee	9.51	9.17
Tonnes of CO_2e per capita	0.033	0.032
Scope 1 & 2 Emissions		
Tonnes of CO_2e	783.04	398.16
Tonnes of CO_2e per employee	1.76	0.89
Tonnes of CO_2e per capita	0.006	0.004

5. Conclusion

WCC, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and has achieved a 3.8% reduction on market-based emissions against the base year.

By achieving this WCC has qualified to use the Carbon Footprint Standard branding. This can be used on all marketing materials, including website and customer tender documents, to demonstrate your carbon management achievements.

6. Recommendations

6.1. Carbon & sustainability targets

6.1.1. Improving the accuracy of future carbon footprint assessments

The estimated overall error margin is +/- 4.9% (which represents +/- 201.83 tCO_2e of the total assessed emissions). To improve the accuracy of future assessments, we recommend the following:

- Implement a monthly data and carbon tracking system, such as Carbon Footprint Ltd's Sustrax MX platform. This will allow more regular monitoring and progress tracking towards targets.
- Obtain electricity supplier details for sites not contracted by WCC (e.g. the managed leisure centres).
- Regularly monitor and analyse energy consumption data to ensure it is correct by the end of the data period.
- Develop an internal GHG accounting schedule detailing when to request data and from who. Include information such as key contact details, secondary contact details, and any specific instructions relevant to certain emission sources/people. Engage with contractors to develop a reporting schedule with them (e.g. twice a year so data can be estimated on 6 months if there are delays at end of year) and build this into contracts.
- Keep a record of dates when properties are vacated (e.g. tenant vacates and it comes back under WCC's operational control).
- Obtain floor area data for sites which have only one gas meter and tenants/landlord have individual boilers (e.g. Danemark Court, Milford House, Gordon Watson House etc.) to allow more accurate apportionment.
- Install automatic meter readers on water meters. Until this is complete, ensure each water meter has had at least one actual reading taken per year.
- Re-state the base year with an estimation for commuting emissions.

6.1.2 Expand the Scope of the Assessment

We recommend that the scope of the assessment is expanded in future to include the aspects that are identified as excluded or partially complete in Table 1. This will allow the Council to understand its full impact.

6.1.3 Target setting for net zero

WCC has set GHG reduction targets within its Carbon Neutrality Action Plan. This includes making its activities carbon neutral (via carbon offsetting) by 2024 and becoming a carbon neutral district by 2030.

As well as targets based on GHG emissions, I recommend WCC sets targets based on activity data (e.g. energy consumption in kWh, fuel consumption in litres, water usage, waste produced etc.).

Many organisations are now setting targets based on typical mid-term and longer terms goals to reach net zero (ISO's International Workshop Agreement on Net Zero Guidance - IWA 42:2022[4]):

- A 50% reduction in emissions by 2030.
- A 90% reduction in emissions by 2045.

All targets set should be reviewed regularly and amended accordingly (i.e. target increased if it is met ahead of schedule). A clear roadmap for individual emissions sources should be in place. This will ensure the strategy for reducing GHG emissions and tracking toward a net zero target is appropriate.

A hyperlink to Carbon Footprint Ltd's whitepaper on target setting can be found below:
https://www.carbonfootprint.com/docs/2021_12_cfp_practical_target_setting_-_white_paper_v10.pdf.

6.2. Reducing emissions

To reduce GHG emissions, we recommend the following:

- Request landlord of Brooks Car Park to switch to 100% renewable electricity tariff and provide evidence of this.
- Request managers of Meadowside Leisure Centre and Winchester Sport & Leisure Park to switch to a 100% renewable electricity supply.
- Conduct an energy audit at Winchester Sport & Leisure Park to identify opportunities to improve energy efficiency and reduce any wastage. **As a newly constructed site, the audit should focus on controls & settings (heating, air-conditioning, lighting etc.), policies and behaviours.**
- Conduct energy audits at other highest gas-consuming sites (i.e. Chesil Lodge, Guildhall, Danemark Court, and Whitewings House). **Focus on insulation, draughts, controls and settings.**
- Investigate transitioning Council-owned sites from gas-powered heating to sustainable alternatives such as electric, hydrogen, solar thermal, and air-source heat pumps.
- Switch to HVO fuel as soon as possible, even if it is a short-term temporary measure until electric buses are implemented.
- Encourage contractors to switch to HVO fuel.
- Obtain electric pool cars and a booking system, targeting staff that are reliant on the flexibility of a car for site visits etc.
- Continue to encourage staff to avoid travel by having remote meetings where appropriate.
- Continue to encourage staff to use sustainable transport for business travel and commuting where able.
- Identify WCC's key suppliers and ensure they all have GHG reduction targets and plans in place.

[4] ISO - Net Zero Guidelines

6.3. Carbon offsetting

Carbon offsetting is a pragmatic way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.

The majority of projects focus on the development of renewable energy in developing countries, however there are others which have a greater focus on social benefits as well as environmental benefits. Further detail on the type and specific projects that we currently have in our portfolio can be provided on request or be found at: http://www.carbonfootprint.com/carbonoffsetprojects.html.

Annex A

A full breakdown of WCC's emission sources is given below. This aligns with the GHG Protocol classification methodology and provides each associated emission source. Note: it does not include well-to-tank emissions.

Scope	GHG Protocol Emission Category	Emission Source	Location-Based (tCO_2e)	Market-Based (tCO_2e)
1	On-site fuel use	Natural Gas	299.25	299.25
1	On-site fuel use	LPG	3.53	3.53
1	On-site fuel use	Petrol	0.83	0.83
1	Company owned vehicles	Council-owned vans	55.47	55.47
1	Company owned vehicles	Council-owned cars	3.25	3.25
1	Fugitive emissions	Refrigerants	0.00	0.00
1	**Scope 1 Total**		**362.44**	**362.44**
2	Consumption of purchased electricity, heat steam and cooling	Electricity	420.60	35.72
2	**Scope 2 Total**		**420.60**	**35.72**
3.1	1. Purchased goods & services	Contractor lorries (Biffa)	821.53	821.53
3.1	1. Purchased goods & services	Contractor fuel use (ID Verde)	269.33	269.33
3.1	1. Purchased goods & services	Water	3.49	3.49
3.1	1. Purchased goods & services	Contractor vans (Biffa)	2.13	2.13
3.1	1. Purchased goods & services	Contractor cars (Biffa)	0.38	0.38
3.3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Transmission & Distribution	36.39	1.67
3.3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Transmission & Distribution (Brooks Car Park)	3.71	3.72
3.4	4. Upstream transportation and distribution	Park & Ride bus service	298.66	298.66
3.5	5. Waste generated in operations	Waste	40.32	40.32
3.5	5. Waste generated in operations	Wastewater	3.31	3.31
3.6	6. Business travel	Grey fleet travel	42.71	42.71
3.6	6. Business travel	Rail travel	0.67	0.67
3.6	6. Business travel	Taxi travel	0.07	0.07
3.6	6. Business travel	Bus travel	<0.01	<0.01
3.7	7. Employee commuting	Commuting	369.98	369.98
3.7	7. Employee commuting	Home-working	38.08	38.08
3.8	8. Upstream leased assets	Upstream leased assets - street lighting	10.72	19.11
3.13	13.Downstream leased assets	Managed Leisure Centres - Natural Gas	951.41	951.41
3.13	13.Downstream leased assets	Managed Leisure Centres - Electricity	316.90	594.40
3.13	13.Downstream leased assets	Managed Leisure Centres - Electricity	27.42	27.42
3.13	13.Downstream leased assets	Managed Leisure Centres - Water	3.39	3.39
3.13	13.Downstream leased assets	Managed Leisure Centres - Wastewater	3.67	3.67
3.13	13.Downstream leased assets	Managed Leisure Centres - Refrigerants	0.00	0.00
3.13	13.Downstream leased assets	Energy recharged to tenants - Natural Gas	130.22	130.22
3.13	13.Downstream leased assets	Energy recharged to tenants - Electricity	39.20	0.00
3.13	13.Downstream leased assets	Tenants – Electricity (Brooks Car Park)	42.94	66.15
3.13	13.Downstream leased assets	Tenants – Water (Shoal only)	0.24	0.24
3.13	13.Downstream leased assets	Tenants – Wastewater (Shoal only)	0.26	0.26
3	**Scope 3 Total**		**3,457.15**	**3,692.32**
All	**Tonnes of CO_2e**		**4,240.20**	**4,090.49**
All	**Tonnes of CO_2e per employee**		**9.51**	**9.17**
All	**Tonnes of CO_2e per capita**		**0.033**	**0.032**